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MAYNARD OWEN WILLIAMS

REAL COINS—TURKISH AND RUSSIAN—SPANGLE A YEZIDI GIRL'S COSTUME

A golden nose ornament, pearl buttons, metal chains, and beads complete her wardrobe wealth. Yezidis worship the devil, but they never pronounce the name Shaitan (Satan) nor any word beginning with *sh*. Their tribal wanderings center in the region north of Mosul, in Iraq (Bulletin No. 2).

Bulletin No. 1, February 23, 1948

New Fields Near Vienna Supply Austrian Oil

THE Zistersdorf oil fields—bone of contention in the stormy Four Power battle over a peace settlement for Austria—are a relatively modern development in the world's petroleum picture.

Until the late 1930's, most of Austria's needs were met by Romanian crude-oil imports which were processed in plants near Vienna (Wien). As late as 1935, the Zistersdorf output amounted to less than 7,000 metric tons. A metric ton has 2,205 pounds.

Within Thirty Miles of Vienna

After Germany's absorption of Austria in 1938, an intensified program of development, plus the discovery of rich new deposits near Zistersdorf, multiplied Austrian oil production many times. By 1939, the oil yield of Austria was estimated at 180,000 metric tons. The figure climbed to 400,000 metric tons in the war year of 1941, and skyrocketed toward the 1,500,000-ton mark in 1944.

The Zistersdorf and sister fields of the Vienna Basin lie near the Czechoslovak border. They are within 30 miles of the industrialized Austrian capital (illustration, next page) and its continent-linking Danube (Donau) River. In convenience, the position of the wells is somewhat comparable to that of oil centers near Pittsburgh.

In History's Path

Unlike the United States oil fields of Pennsylvania, however, those of the Vienna Basin are the nation's only producing sources. Since the defeat of Germany, they have come under Russian control, as part of the Soviet zone in Allied-occupied Austria. The output was reported in 1947 to be down to about 825,000 metric tons.

Oil derricks, pipes, and refineries stand out sharply as modern industrial symbols amid Austria's old farmhouses and villages clinging to medieval architecture and customs. Here and there, ruins of ancient castles and monasteries hint at the centuries of history made in this strategic corner of central Europe.

Wild Birds Nest Near City

The Vienna Basin has been one of the great intersections for trade and conquest since the days of the Baltic amber commerce and the early Roman expansions.

Close to Vienna, this Danube lowland spreads eastward in marshes of reeds and bushes, the home of herons, wild geese, and ducks. To the north, where the oil fields are found, the wooded Austrian hills merge with the hazy blue-green highlands of Czechoslovakia's Moravia.

On their sunny southern slopes, cattle graze and terraced vineyards rise. In the fertile valleys, whole families work in fields of rye, oats, wheat,

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B. ANTHONY STEWART

PLANTED NEARLY 200 YEARS AGO, THE WETHERSFIELD ELM HAS BECOME NEARLY AS WELL KNOWN AS HARTFORD'S CHARTER OAK

For a century the life spans of the Connecticut River Valley's two famous trees overlapped. The Charter Oak, 800 years old, was destroyed by a storm in 1856. This immense tree, one of the largest elms in America, shades a large section of Broad Street Green in Wethersfield, Connecticut, a few miles south of Hartford on the banks of the Connecticut River (Bulletin No. 5).

Bulletin No. 2, February 23, 1948

Iraq Air Bases Contrast with Bible Sites

IRAQ, whose civilization is very old and whose government is very young, has a new cabinet. Dissatisfaction over the treaty signed with Britain on January 15 prompted the premier to flee in disguise, by plane, to neighboring Trans-Jordan—a modern version of Arabian Nights magic.

The treaty, later rejected by Iraq, provided for Britain's continued use of British-built air bases at Habbaniya and Shaibah in Iraq, a joint defense council of the two nations, and permission for British troops to enter Iraq in the event of a war involving either country.

Tigris and Euphrates Cross Country

Within a kingdom only 27 years old, dotted with modern airfields, the ancient cities of Babylon and Nineveh lie in powdering ruins. There, also, are the traditional sites of the Garden of Eden and the Tower of Babel. The waters of the Biblical flood submerged the region.

The frontiers of modern Iraq were drawn soon after World War I. The Arab monarchy's area, somewhat larger than that of Arizona, is roughly the territory occupied by the former Turkish provinces of Basra, Baghdad, and Mosul (illustration, cover). Traversed from northwest to southeast by the Tigris and Euphrates rivers, it includes most of ancient Mesopotamia—"the land between the rivers," where Bible history began.

Basra, Baghdad, and Mosul also are the names of Iraq's chief cities. Baghdad, the capital, steeped in Arabian Nights romance, sits beside the Tigris east of the center of the triangle-shaped state. It is home to more than a tenth of the country's population, now estimated to be nearly 5,000,000. Shimmering silks and buildings of many-colored tiles have helped spread abroad Baghdad's renown.

Baghdad's big airport is a pivotal point in international routes to the east. Fifty miles west of the city, across the Euphrates River from the Garden of Eden, is Lake Habbaniya. Along its shores is a large military land- and sea-plane base, opened a decade ago and expanded by the British during World War II.

Channel to Basra Takes Constant Dredging

The historic Tigris and Euphrates rivers flow south from the uplands of Turkey and finally mingle their waters above Basra in Iraq's southeast corner. They form the Shatt al Arab, a river which flows 77 miles to the Persian Gulf. Date groves line its shores to a depth of two miles. Vessels of ancient design—*dhows* with graceful lateen sails and *gufas* (illustration, next page) resembling workbaskets—are traditional river transport. Near Basra is Shaibah, the second British-built air base.

Twice a day the gulf tide halts the current in the river. Silt settles, forming a mud bar 20 miles across. After World War I channel dredging was set up along the Shatt al Arab so that the primitive port could accommodate large ocean vessels.

By 1941, the channel to Basra was so well marked by buoys and lighted that wartime skippers came to know it as "Piccadilly." From 1941 to 1943,

corn, sugar beets, and potatoes. Often they employ agricultural implements and farming methods which have changed little with the years.

NOTE: Vienna and the region of the Zistersdorf oil fields may be located on the National Geographic Society's map of Germany and Its Approaches. Write the Society's headquarters, Washington 6, D. C., for a price list of maps.

For further information on Austria, see "A Tale of Three Cities," in the *National Geographic Magazine* for December, 1945; and "This Was Austria," July, 1945.* *(Issues marked with an asterisk are included in a special list of Magazines available to teachers in packets of ten for $1.00)*

See also, in the GEOGRAPHIC SCHOOL BULLETINS, February 10, 1947, see "Treaty for Austria Being Drafted."

AP FROM PRESS ASS'N

GERMAN WRECKAGE SUPPORTS A TEMPORARY BRIDGE IN THE HEART OF VIENNA

A German attempt to destroy this bridge over Vienna's Danube Canal was not completely successful. Still anchored to piers at one side, it remained firm enough to serve as a foundation for a wooden link between the two sections of the city. It was one of more than a dozen spans across the canal which retreating Germans blew up. During the first four years of the war, the Austrian capital suffered little damage. When the Allies' precision bombing of war plants became too accurate, the Germans moved many aircraft factories to Vienna. Allied planes pursued them to their new location. These apartment buildings were not their targets, but were damaged because of their position between the artillery of Russian and German forces in the last days of the battle for Vienna.

Bulletin No. 3, February 23, 1948

Africa's Rugged Basutoland Holds Life Clues

BASUTOLAND'S "Mountains of Darkness," in far-south Africa, provide a rugged setting for the fossil hunt under way there by American scientists seeking clues to life's development from reptile to mammal forms.

The roughhewn structure of Basutoland begins at plateau levels nearly a mile above sea level. Its loftiest peaks—the Drakensbergs—nudge the clouds at 11,000 feet and more along the eastern border. The Mountains of Darkness rise in the northern part of the landlocked country.

Visited by Britain's Royal Family in 1947

In these and near-by mountain ranges the little men of the Stone Age lived. Crude paintings of these pygmy bushmen are still on view for tourists adventurous enough to ride the sure-footed Basuto ponies up narrow trails to the old caves.

Although surrounded by the Union of South Africa, Basutoland is ruled directly from London. It has been a British High Commission Territory since 1884. It lies about halfway between the port of Durban and diamond-mining Kimberley. The railroad connecting these points runs just outside the border of Basutoland for several miles. Britain's royal family, during its South Africa tour of last year, left the train at Ladybrand, Orange Free State, and crossed the Caledon River to Maseru, Basutoland's capital, for a visit with the natives.

Basutoland is governed somewhat as a native reservation. White men are not permitted to buy land in the country. Among a native population of nearly 600,000, there are only about 1,500 white residents, chiefly officials, traders, and missionaries.

The protection of the British government was first sought around the middle of the 1800's by the Basuto High Chief, Moshesh, who had united his warring tribes into a nation, but was hard pressed by the neighboring Boers and other forces.

Livestock Outnumbers People

The original Mountain of Darkness—the cliff-topped plateau of "Thaba Bosigo" where the present fossil hunters started work—was the unconquered natural fortress of Chief Moshesh. It is still the sacred burial ground of Basuto chieftains.

Modern Basutoland, with an area half that of West Virginia, is one of the most densely settled regions in Africa. However, its extensive livestock population—sheep, goats, horses, and cattle—far outnumbers the human inhabitants.

Most of the Basutos lead a primitive pastoral life, raising meager subsistence crops of corn, wheat, and vegetables. They live in mud-walled, thatched huts. Their possessions include a few bright-colored blankets and the simplest of household goods.

The severe climate of their highlands holds the Basutos to the lower valleys in winter. In summer, they drive their herds and flocks to graze on the green upper meadows, which then abound with vivid wild flowers.

shipments of munitions and oil for Allied armies of the whole Eastern theater kept the port busy night and day.

Basra has nearly 100,000 residents. A mile above this port of Sindbad the Sailor is its flying field and modern airport hotel.

Mosul, a city of 160,000 on the northern Iraq uplands, owes recent rapid growth to the country's oil industry. Rich oil fields lie between Mosul and Kirkuk, 100 miles southeast. A pipeline running from Kirkuk to the Mediterranean at Haifa has stimulated Iraq's oil production.

Sheep, goats, and cattle graze the upland pastures. Irrigation and flood control are age-old problems for the grain and date growers of the fertile plains. A big chunk of the Syrian Desert lies in western Iraq.

The Kingdom of Iraq was created in 1921 from the British Mandated State of Iraq as the result of a plebiscite. In 1932, the nation attained full sovereignty and membership in the League of Nations. A regency governs for the boy king, Feisal II. Born in 1935, he became king in 1939 after the accidental death of his father.

NOTE: Iraq is shown on the Society's map of Bible Lands and the Cradle of Western Civilization.

For further information, see "Mountain Tribes of Iran and Iraq," in the *NGM* for March, 1946*; and "Forty Years Among the Arabs," September, 1942.

FIELD MUSEUM OF NATURAL HISTORY

A SEAGOING SEWING BASKET GETS ITS WATERPROOF COATING OF PITCH

Among the craft which ply Iraq's waterways, the *gufa* is perhaps the most unusual in design. Shaped like a workbasket or a flower bowl, it is tightly woven of reeds. Gufas are sometimes 10 feet in diameter. Strong and flexible, they carry heavy cargoes through swift currents. Turbaned workmen are applying to this gufa a waterproof coat of pitch. It comes from Iraq's bitumen wells which furnished the sticky substance for the walls of ancient Babylon.

Bulletin No. 4, February 23, 1948

Scottish Queen Gave Girls Leap-Year Rights

THE unwary male who is snared by a leap-year proposal can blame—or thank—Margaret, Queen of Scotland.

This sovereign is the lady who is credited with introducing the proposition that unmarried girls should be entitled to special advantages in husband-hunting each leap year.

France Followed Scotland

According to the story, this all-but-forgotten ruler ordained, in the leap year 1288, that any young man who was not already married or betrothed and who rejected an offer of marriage from a maiden lady, of high or low estate, should be fined one pound or less, according to his means.

The statute is said to have remained on the books only a few years, but long enough to prompt France to enact similar legislation. Today in Paris, the nearest approach to such a custom is on November 25, the anniversary of St. Catherine, patron saint of spinsters. Young women make a "Sadie Hawkins" holiday of the occasion, dress in outlandish costumes, and patrol the boulevards in groups, seeking eligible-looking young men.

Leap Year Born in Caesar's Day

When one's birthday anniversary falls on February 29, the question is when to celebrate in non-leap years. An English statute of 1236, under King Henry III, has been interpreted as making February 28 the official birthday. For celebrations, however, February 28 and March 1 are now variously chosen.

Leap year itself was "born" in 46 B.C., when astronomers under Julius Caesar figured that the solar year was 365 days and six hours long. So they added an extra day every fourth year to the Roman calendar to adjust the 24 hours that had accumulated, according to their calculations.

Calendar Still in Error

It was later learned, however, that this made the calendar year 11 minutes, 14.49 seconds longer than the solar year. By way of correction, the Gregorian calendar provides that "even-hundred" years are not leap years unless they can be divided by 400. Thus 1900 was not a leap year, but 2000 will be. Nevertheless, even with this adjustment, the Gregorian calendar gains slightly more than 44 minutes every century.

Therefore there will be an error of one full day about 3,261 years after the Gregorian correction of the calendar, when another leap-year day will have to be omitted. The Gregorian correction was made in 1582.

The English expression "leap year" refers to the jumping of one day in the week in leap years. Thus, March 1, 1946, fell on Friday, and March 1, 1947, fell on Saturday; but March 1, 1948, will "leap over" to Monday.

Calendars and clocks (illustration, next page) are simply man-made devices to divide and record time. All time is based on the period required for the earth to make a complete revolution around the sun. This is a year,

Overgrazing, devastating erosion, and general overpopulation have brought increasing economic problems to Basutoland. For years, large numbers of young men have left home to find work in the gold mines (illustration, below) and on the big plantations of neighboring states.

NOTE: Basutoland may be located on the Society's map of Africa.

For additional information, see "Basutoland Decrees War Tax to Aid Britain," in the GEOGRAPHIC SCHOOL BULLETINS, April 19, 1943.

W. ROBERT MOORE

SOUTH AFRICAN GOLD-MINE WORKERS SPEND THEIR DAY OFF IN TRIBAL DANCING

Planks placed over open oil drums (right) make a resounding xylophone. Two smaller instruments add to the haunting beat for the dancers. Mine owners arrange such Sunday-afternoon diversions for the enjoyment of their men, who are recruited from all south Africa. The policeman keeps order.

NEW! NATIONAL GEOGRAPHIC MAGAZINE CUMULATIVE INDEX, 1899–1947

This new master key to geographic knowledge unlocks the vast fund of information in your *National Geographic Magazines* from January, 1899, through December, 1946, with an accompanying supplement for 1947. It contains 22,000 references to topical headings, places, nature subjects, authors, titles, maps, and pictures, and includes an illustrated history of the National Geographic Society and its Magazine by Gilbert Grosvenor, editor of the Magazine.

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Bulletin No. 5, February 23, 1948

Connecticut River to Supply More Power

THE Connecticut, New England's "long river" with the long name, is noted as one of the nation's historic and scenic waterways. Along its banks stand ivied colleges, relics of early settlement and Indian fighting, and pleasant, elm-shaded towns (illustration, inside cover).

Industry has kept pace along the river; numerous falls, furnishing water power, long have been magnets for manufacturing plants. Today the Connecticut is being called on to produce even more electric power.

First Holyoke Power Dam Started 100 Years Ago

In Holyoke, Massachusetts, the city fathers are proceeding with municipal plans to wring more hydroelectric energy from the river's Hadley Falls stretch—on which the city of 75,000 is located. Harnessing of the water power to date has been in the hands of privately owned and controlled companies.

Hadley Falls, midway between Northampton and Springfield, drops 60 feet in a 400-yard bend. The torrent had turned mill wheels long before 1848. But early in that year, work began on a 30-foot dam 1,000 feet across, a $75,000 project.

Due to some miscalculation, the original dam was short-lived. Six hours after its gates were first closed, the dam was swept downstream. A fresh start was made, and a second dam constructed in 1849. The builders reaped no immediate financial reward. At the time there was too little demand for their big supply of power.

New management took over. Gradually, cotton, textile, and paper mills rose on the favored industrial site. Power canals, little changed after 90 years service, still crisscross the city at three different levels, enabling triple use of the water from the dam. They total nearly five miles in length.

Other Dams Provide Power

Soft water as well as abundant power attracted seven large paper mills. Holyoke, the "paper city," is known especially for fine writing papers. Devastating floods in 1927, 1936, and 1938 failed to wreck the Hadley Falls dam which had been rebuilt in 1900.

At other points the Connecticut River produces electric power. Far north at East Barnet, near the maple-sugar capital of St. Johnsbury, Vermont, New England's largest dam impounds 18 billion gallons of water at the head of Fifteen Mile Falls and creates power for a large part of the region.

Also on the long course of the river, dams above rapids create power at Wilder, near Hanover, New Hampshire; at Bellows Falls, Vermont; at Vernon, near Brattleboro, Vermont; at Turners Falls, near Greenfield, Massachusetts; and at Windsor Locks, Connecticut, not far above the tidewater limit at Hartford.

The settlement of the fertile intervales of the Connecticut Valley in the 1630's by freedom-loving pioneers from Massachusetts Bay marked the first

the basic calendar division. The hour, basic clock unit, is an arbitrary division representing one twenty-fourth of the time it takes for the earth to revolve once on its axis.

NOTE: For additional information on the division and measurement of time, see "Split-second Time Runs Today's World," in the *National Geographic Magazine* for September, 1947; and "Time and Tide on the Thames," February, 1939.*

See also, in the GEOGRAPHIC SCHOOL BULLETINS, January 27, 1947, "Greenwich Observatory Is Moving to Country."

J. BAYLOR ROBERTS

SCHOOL CHILDREN GIVE RAPT ATTENTION AS A U. S. NAVAL OBSERVATORY CLOCK IS EXPLAINED

This Washington, D. C., timepiece, and three others like it, control the radio time signal sent out every hour. The nation sets its 70,000,000 watches and uncounted clocks by these signals. Quartz crystals which vibrate electrically in a vacuum tube are the "spring" for this master clock, one of the most accurate in the world. Actually, it is constantly wrong, but by fractions of seconds so small that only astronomers can measure the error.

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migration inland by the English, who had previously clung to the coast.

Until a short time before the railroad line was extended in 1846 from Springfield to Greenfield, the Connecticut River was an important freight transportation route. Canals built in the late 1700's enabled flat-bottomed boats to pass Enfield Rapids, Hadley Falls, Turners Falls, and Bellows Falls. The Connecticut River was one of the first in America to be thus improved.

The valley of the Connecticut contains some of New England's richest farms. Tobacco (illustration, below), a seemingly misplaced crop, grows along the river as far north as southern Massachusetts.

NOTE: The Connecticut River is shown on the Society's map of the Northeastern United States.

For additional information, see "Long River of New England" and "Flow Onward, Connecticut" (24 color photographs), in the *National Geographic Magazine* for April, 1943; and "Connecticut, Prodigy of Ingenuity," September, 1938.*

FAIRCHILD AERIAL SURVEYS, INC.

IN LONG BARNS BESIDE THE "LONG RIVER," TOBACCO HANGS TO DRY

The Connecticut River Valley between Hartford, Connecticut, and Springfield, Massachusetts, is the world's largest producer of tobacco for cigar wrappers. In summer, cheesecloth covers the oblong fields with canopies of white. This protection insures a mild and light-colored leaf.